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Meat on the menu? How the menu structure can stimulate vegetarian choices in restaurants

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Abstract

Excessive meat consumption has a negative impact on people's health, animal welfare, and the environment in general. Remarkably, however, despite the growing number of flexitarians, only a small number of people choose a vegetarian dish at a restaurant. Therefore, in the current study, we tested how vegetarian dishes need to be presented in order to stimulate the choice for these dishes. In an online study, participants were presented with one of four different menus: Either an all vegetarian menu, an all vegetarian menu with the possibility to add meat to each dish, a menu with increased offer on vegetarian dishes with explicit indication, and a menu with increased offer on vegetarian dishes without explicit indication. Subsequently, participants indicated how likely it was that they would eat in this restaurant and which dish they would choose (i.e., vegetarian or not). Additionally, they completed a reactance questionnaire. Results show that when people get the option to add meat to the vegetarian dishes on a menu this increases the choice for a vegetarian dish. No effect of menus on reactance and willingness to eat at a restaurant was found. These findings suggest that presenting meat as an alternative or additive option can help to change behavior toward a flexitarian lifestyle.

1 | INTRODUCTION

With an increase in income, people's diets change, which is reflected by the overconsumption of meat (Tilman & Clark, 2014; Walker, Rhubart-Berg, McKenzie, Kelling, & Lawrence, 2005). This has a negative impact on people's health, animal welfare, and the environment (e.g., Foer, 2009; Raphaely & Marinova, 2015; Tilman & Clark, 2014; Walker et al., 2005). A growing body of research on the psychological construct of speciesism, that is the allocation of different moral value based on the species one belongs to, helps to explain the reasons why people continue to eat meat (Caviola, Everett, & Faber, 2019). For example, people who attribute less mental attributes to animals are more likely to eat meat (Bastian, Loughnan, Haslam, & Radke, 2012; Loughnan, Bastian, & Haslam, 2014). Furthermore, meat consumption is higher in right-wing adherents (Dhont & Hodson, 2014), tied to a male identity (Rothgerber, 2013), and can be explained by perceived threat to the dominant carnist ideology and superiority beliefs of humans over animals (Dhont & Hodson, 2014; Leite, Dhont, & Hodson, 2019). Personal beliefs about eating meat as being natural, normal, necessary, and nice (also called the 4Ns) play a pivotal role in rationalizing meat consumption (Piazza et al., 2015).

Research has suggested that moderating meat consumption could lead to a greenhouse gas emission reduction of 30% (Tilman & Clark, 2014). Furthermore, it would have a larger impact on the environment if the majority of people would eat less meat than when only a smaller group of people would eat no meat at all (Spencer, Cienfuegos, & Guinard, 2018). So, targeting meat consumption habits on a large scale seems to be one of the most promising possibilities to have a positive impact on the environment (Green et al., 2015; Horgan, Perrin, Whybrow, & Macdiarmid, 2016; Ranganathan

et al., 2016). Fortunately, in western countries more and more people follow a flexitarian diet, meaning that they only eat meat occasionally (Delaney, 2018). Remarkably, however, despite the growing number of flexitarians, the research found that for example in the Netherlands, where about one-third of the people do not eat meat on a daily basis (RIVM, 2017), only 7% of the people sometimes chooses a vegetarian dish at a restaurant (Klumper, 2017). Therefore, to further stimulate people to choose vegetarian dishes in restaurants, the present research investigates how the choice for a vegetarian dish can be fostered by changing the presentation of these dishes on the menu.

Because consumer choices are mostly based on habits (Wood & Neal, 2009), environmental cues (Prinsen, de Ridder, & de Vet, 2013), and judgemental heuristics (Campbell-Arvai, Arvai, & Kalof, 2014) using a strategy that incorporates these three factors can be very effective. Changing the ways how choices are presented is an often recommended nudging strategy to stimulate proenvironmental behavior (see for example Bacon & Krpan, 2018; Campbell-Arvai et al., 2014; Guthrie, Mancino, & Lin, 2015). The advantages of this strategy are that first, while it is made easier to make certain choices, it does not restrict alternative choices (Campbell-Arvai et al., 2014). Second, because it utilizes unconscious processes the attempt to influence is often discreet and unnoticed (Thaler & Sunstein 2009). Ozdemir and Caliskan (2015) reviewed the literature on how choices are presented on a menu and distinguished four main dimensions of menu designs that can have considerable effects on people's choices: Menu item position, menu item description, menu item label, and menu card characteristics.

Research has shown that using default-based nudges on a menu is very effective in increasing the choice for vegetarian dishes (Campbell-Arvai et al., 2014). Defaults are the options people get when they do not explicitly ask for other options. In this research, defaults were used by presenting a menu including only vegetarian dishes and by giving people the possibility to look at another menu including dishes with meat when asking for it. This led to an increased probability that people would choose a vegetarian dish. This strategy, however, could raise concerns about freedom of choice, as defaults can be seen as unfair, the alternatives as too inconvenient to choose, and thus the whole strategy as a constraint in choices. When freedom of choice is threatened, this can lead to reactance, meaning that people who do not like the presented options are motivated to restore their freedom and will therefore not choose these options (Brehm, 1966). For example, it was found that restrictions that threaten freedom of choice regarding meat consumption can lead to noncompliance, probably because they elicit reactance (Lombardini & Lankoski, 2013). Therefore, Campbell-Arvai et al. (2014) recommend that decision makers should always have easy access to alternatives and the freedom to choose these alternatives. In the current study, we will present three different menu structures that differ in how they present the vegetarian options: First, we will test an all vegetarian menu that does restrict freedom of choice. Second, we test a menu with only vegetarian dishes and people get the option to add meat to the vegetarian dishes. By displaying the options of meat that could be added, choosing them is made easier, and thus freedom of choice is preserved. Last, we will increase the offer by reversing the actual meat-vegetarian ratio offered by most restaurants, creating a menu with a majority of vegetarian dishes, and a small number of meat dishes.

Highlighting certain foods with an explicit indication that this food does not contain meat can stimulate choosing these foods (Visschers & Siegrist, 2015; Wagner, Howland, & Mann, 2015). However, recent research found that highlighting options by splitting a menu in separate sections for meat and vegetarian dishes reduced the likelihood of people choosing the vegetarian dishes (Bacon & Krpan, 2018). The authors explained these findings by the fact that splitting the sections makes the vegetarian dishes look like a special dietary requirement and not meant for people who are not vegetarian. Putting a (V) as an indication mark after each vegetarian dish was shown to reduce this paradoxical effect (Bacon & Krpan, 2018). Interestingly, however, some restaurants choose not to indicate vegetarian dishes at all. Looking at the paradoxical effect of providing indications by splitting the menu (Bacon & Krpan, 2018), no indication might be even more effective in suggesting that choosing a vegetarian dish is normal than indicating vegetarian dishes with a (V). Thus, vegetarian dishes could be presented as a norm by *not* indicating them as vegetarian. Therefore, when reversing the actual meat-vegetarian ratio, we will test a menu with indication as well as a menu without indication.

In the current study, we investigated how the choice for a vegetarian dish can be stimulated depending on the menu structure. Participants were presented with one of four menus: The first menu was an all vegetarian menu. The second menu was a menu with only vegetarian dishes with the opportunity to add meat to these dishes. The third menu was a menu with an increased offer on vegetarian dishes with (V) as an indication. The fourth menu was a menu with an increased offer on vegetarian dishes without indication. Subsequently, participants completed a reactance measure, had to indicate how likely it was that they would eat in this restaurant, and which dish they would order. By doing so, we could compare whether the evaluation of the restaurant differed between conditions and whether the vegetarian choice was affected by the different menus. Based on the previous literature we expected that presenting an increased offer on vegetarian dishes can be effective in stimulating people to choose a vegetarian dish. Specifically, we expected that a restriction in the freedom of choice would lead to reactance, with the all vegetarian menu leading to more reactance than the two menus with increased offer, and the option of adding meat resulting in the least reactance. Furthermore, we expected people's willingness to eat at a restaurant to be highest when presented with the optional adding meat menu, followed by the increased offer on vegetarian dishes and the restriction in freedom of choice in the all vegetarian menu. In terms of choosing a vegetarian rather than a meat dish, we expected that a larger offer preserving the freedom of choice will lead to more choices for vegetarian dishes, and thus, that the optional adding meat menu will be most effective.

2 | PILOT STUDY

In a pilot study (N = 30) we checked whether the three menus that were supposed to suggest social norms (i.e., the optional adding meat menu, the increased offer with indication menu, and the increased offer without indication menu) differed in the extent to which they suggest descriptive norms and injunctive norms. A 3 (*menu: Optional adding meat vs. increased offer with indication vs. increased offer without indication*) × 2 (*norm: Descriptive* vs. *injunctive*) within the subject design was used. Participants were presented with each of the three menus. After each menu, participants had to answer two questions assessing the descriptive norm ("In the restaurant where this menu is presented, it is common to order a vegetarian dish") and the injunctive norm ("In the restaurant where this menu is presented, ordering a dish with meat is disapproved"). These questions were based on earlier research on social norm perception (Jacobson, Jacobson, & Hood, 2015). Participants responded on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). The order of the menus was randomized to avoid systematic effects (Field & Hole, 2003). Important to note, we had no a priori expectations regarding which menu presents a specific norm.

A repeated measures MANOVA (multivariate analysis of variance) showed that there was a significant main effect on the menu, $F(2, 28) = 5.84$, $p = .008$, and $\eta_p^2 = .29$ The optional adding meat menu (M = 3.70, SD = 0.71) scored significantly higher on suggesting norms than the increased offer without the indication menu (M = 3.07, SD = 0.90, d = 0.78, CI 95 [0.16, 1.10], and p = .005), but not different than the increased offer with indication menu (M = 3.30, SD = 0.78, CI 95 [−0.06, 0.81], and p = .054). Furthermore, the increased offer with indication menu did not differ from the increased offer without indication menu (d = 0.28, CI 95 [−0.15, 0.62], and p = .414). Additionally, a significant main effect on the norm was found, $F(1,29) = 132.16$, $p < .001$, and $\eta_p^2 = .82$. Overall, the menus were more successful in suggesting a descriptive norm (M = 4.21 and SD = 0.68) than an injunctive norm (M = 2.50 and SE = 0.78). No significant effect was found for the interaction between the menu and type of norm, $F < 1$, *n.s.* Based on these findings, it can be concluded that the two menus with increased offer on vegetarian dishes do not differ in the extent to which they suggest descriptive norms and injunctive norms. The optional adding meat menu suggests stronger descriptive norms and injunctive norms compared to the increased offer without the indication menu. Important to mention, given the difference in positive wording for the descriptive norm and negative wording of the injunctive norm, the main effect of norm should be taken with caution.

3 | METHOD

3.1 | Participants and design

This research was approved by the Ethics Committee of the Faculty of Social Sciences at Radboud University Nijmegen (number ECSW-2018-052). Based on an a priori estimation of statistical power of (1-β) = .8, an alpha level of .05, and a slightly conservative estimated medium effect size of r = .30 (based on an r = .36 derived from Campbell-Arvai et al., 2014), 40 participants per condition were required for this experiment.

Participants under the age of 18 (N = 2), vegetarians/vegans (N = 15), and people with allergies that could interfere with their food choice (N = 4) were excluded. They were distributed across the all vegetarian menu (N = 2), the optional adding meat menu (N = 9), the increased offer with indication menu (N = 6), and the increased offer without indication menu (N = 4). The final sample consisted of 329 participants (age range 18–81 years, M_{age} = 32.30, SD_{age} = 15.81, 230 women, 98 men, see Table 1 for the level of education). A large part of the participants was flexitarian (see Table 2 for details). After data analysis, the collection was not continued. All participants were fluent in Dutch. Participants either took a part in a raffle to win a €5 gift card (social media participants) or received course credit (university's recruitment system participants) for taking part in the study. Furthermore, participants were incentivized to recruit other participants by rewarding the two most successful recruiters a €15 and €5 voucher, respectively. No double IP addresses were registered, suggesting that participants did not take part twice.

A one factorial between-subjects design (*menu: All vegetarian vs. optional adding meat vs. increased offer with indication vs. increased offer without indication*) was used. We report all measures, manipulations, and exclusions of this study. All participants were randomly assigned to one of the four conditions. Participants were distributed almost equally among the all vegetarian menu (N = 84), the optional adding meat menu (N = 82), the increased offer with indication menu (N = 80), and the increased offer without indication menu (N = 83).

3.2 | Procedure and materials

Participants were invited to take part through messages on social media platforms and the university's participant recruitment system. Participants were presented with an informed consent form and directed to an online survey (Qualtrics, 2018) in Dutch. After agreeing, participants were told to imagine that they wanted to go out to eat with some friends or family that evening but that they had not chosen a restaurant yet. They were told that they found a restaurant and had to look at the menu to check whether this restaurant was

TABLE 1 Descriptive statistics noted as number (%) for the level of education

Level of education	Other	Lower general secundary education	Intermediate vocational education	Higher vocational education	University education
Number of participants	6 (1.8%)	15 (4.6%)	57 (17.3%)	111 (33.7%)	140 (42.6%)

TABLE 2 Descriptive statistics noted as number (%) for past behavior regarding meat consumption (i.e., the frequency of eating meat during the previous seven days)

Days	0	1	2	3	4	5	6	7
Number of participants	8 (2.4%)	15 (4.6%)	20 (6.1%)	42 (12.8%)	57 (17.3%)	81 (24.6%)	67 (20.4%)	39 (11.9%)

TABLE 3 Descriptive statistics noted as mean (*SD*) for reactance (threat of freedom and anger), past behavior regarding meat consumption, willingness to eat at a restaurant, and food choice (percentage of participants choosing a vegetarian dish) for each of the four different menus (all vegetarian, optional adding meat, increased offer with indication, and increased offer without indication)

	All vegetarian (*N* = 84)	Optional adding meat (*N* = 82)	Increased offer with indication (*N* = 80)	Increased offer without indication (*N* = 83)	Total (*N* = 329)
Threat of freedom	2.24 (0.86)	2.34 (0.92)	2.25 (0.74)	2.15 (0.75)	2.25 (0.82)
Anger	2.24 (1.08)	2.12 (1.01)	2.01 (0.90)	2.18 (0.99)	2.14 (0.99)
Past behavior regarding meat consumption	4.87 (1.55)	4.13 (1.78)	4.69 (1.75)	4.41 (1.82)	4.53 (1.74)
Willingness to eat at a restaurant	5.82 (2.12)	6.18 (2.06)	6.45 (1.75)	6.24 (1.96)	6.17 (1.98)
Food choice	100%	73%	44%	61%	70%

suitable for dinner. Then they were presented with one of the four menus, which they could look at for an unlimited time. The menus used in this study consisted of three categories: Pizza, pasta, and so-called others. Each category had six dishes, which were based on a pretest (*N* = 20). In this pretest, people were asked to make a top six list of dishes with and without meat from three low-budget restaurants. The most popular dishes were selected for the menus used in this study. This resulted in menus with vegetarian dishes (e.g., pizza Contadina with tomato sauce, cherry tomatoes, arugula, and Parmesan cheese; stuffed pasta with ricotta and spinach, cream sauce, goat cheese, arugula, paprika, eggplant, and zucchini; or falafel burger), and meat dishes (e.g., pizza pollo con extra with tomato sauce, mozzarella, red onions, fried chicken, roasted pepper, and fresh spinach; pasta carbonara with cream sauce, Pancetta bacon, egg, and parmesan cheese; or round steak). Each menu consisted of 18 dishes in total. The all vegetarian menu consisted only of vegetarian dishes, as did the optional adding meat menu, but here, meat (e.g., minced beef, chicken, or ham) could be optionally added to those dishes. The increased offer menus consisted of four vegetarian dishes and two dishes with meat per category. On the increased offer with indication menu, the vegetarian dishes were indicated with a (v) and on the increased offer without indication menu they were not. See Appendix A for an English translation of the menus.

Subsequently, participants completed the questionnaire. See Table 3 for descriptive variables and Appendix B for an English translation. First, participants were asked to indicate their willingness to eat at the restaurant: Participants were asked how likely it was that they would eat in the restaurant where the menu is presented. They could answer on a scale from 0 (not at all) to 10 (very much). Second, they were asked to indicate which dish they would like to choose. This was possible by clicking on the dish on the menu with the mouse cursor. For analysis, food choice was divided into two categories (0 = meat and 1 = vegetarian). Third, reactance was measured by assessing the perceived threat of freedom and anger (Dillard & Shen, 2005). A total of eight items measured the perceived threat of freedom and anger. The items were translated in Dutch and the word "message" was replaced by the word "menu" (e.g., "the menu threatened my freedom to choose,"; "I felt angry while viewing this menu"). Participants were presented with a 5-point Likert scale (1 = totally disagree and 5 = totally agree). Reliability measures showed that the threat of freedom scale (Cronbach's α = .84) and the anger scale (Cronbach's α = .91) were highly reliable. Factor analysis was used to determine which items related to each other (Field, 2000). It showed that reactance consisted of threat of freedom and anger.[1] In the analysis, reactance was, therefore, always measured using threat of freedom and anger separately. Fourth, based on earlier research (Bacon & Krpan, 2018), past behavior regarding meat consumption was included in this study (i.e., the frequency of eating meat during the previous seven days) by asking participants to use a slider to indicate the number of times they ate meat for dinner for the past seven days, ranging from 0 to 7. To mask the main interest of this study, people were also asked about past behavior regarding other food categories such as vegetables, potatoes, rice, pasta, fish, eggs, and dairy. Last, to be able to exclude participants based on limitations regarding food they had to indicate whether they had any allergies, dietary requirements or restrictions, or whether there were other reasons why they would not eat a specific food. Given the variety of possible

[1]The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis (KMO = .87). Using the Kaiser-criterion and looking at the Scree plot, it showed that reactance consisted of two subcomponents with an eigenvalue of 4.54 and 1.41, respectively. These subcomponents together explained 66.71% of the variance. Oblique rotation showed that, as intended by Dillard and Shen (2005), the items measuring the perceived threat of freedom loaded on one factor and the items measuring anger loaded on the other. Therefore, threat of freedom and anger were constructed each using those four items.

TABLE 4 Estimated parameters of the logistic regression model for food choice with optional adding meat as a reference category

	B	*SE*	OR
Menu			
Increased offer with indication	−1.16*	.35	0.31
Increased offer without indication	−.48	.35	0.62
Past behavior regarding meat consumption	−.37**	.09	0.69
$\chi^2(3)$	35.32**		
Nagelkerke pseudo R^2	.181		

*Significant ($p < .05$).
**Significant ($p < .01$).

answers, this was an open-ended question. Subsequently, demographic variables were assessed. All materials can be found at: [https://osf.io/cnbky/]. After completing the questionnaire, participants were thanked for participation, paid, and debriefed about the aim of this study on social media after all data were collected.

3.3 | Analysis

To analyze the data, IBM SPSS Statistics version 25 was used (IBM SPSS Statistics, 2018). To test whether different menus would lead to differences in reactance, consisting of threat of freedom and anger, a MANOVA was performed. An ANOVA (analysis of variance) was performed to test whether the different menus led to differences in willingness to eat at a restaurant. A binary logistic regression analysis was used to test whether the different menus would lead to differences in food choice.

4 | RESULTS

4.1 | Randomization check

A randomization check showed that the groups did not significantly differ in sex, age, and level of education (all *p*'s > .231). The groups did differ in past behavior regarding meat consumption (i.e., the number of times they ate meat for the past seven days, $p = .036$). A Bonferroni post hoc test revealed a significant difference in past behavior regarding meat consumption between the all vegetarian menu group ($M = 4.87$, $SD = 1.55$) and the optional adding meat menu group ($M = 4.13$, $SD = 1.78$, $d = 0.44$, CI 95 [0.13, 0.75], and $p = .039$). The increased offer with ($M = 4.69$, $SD = 1.75$) and without indication ($M = 4.41$, $SD = 1.82$) did not differ from any other menus on past behavior regarding meat consumption (*p*'s > .253). Participants' past behavior regarding meat consumption ($N = 329$, $M = 4.53$, $SD = 1.74$) correlated with food choice, $r = -.20$, $p < .001$, with people with higher meat consumption choosing meat more often. This variable was included as a covariate in the analysis.[2]

[2]When not including the covariate in the main analyses, results show similar effects, with the additional adding meat menu leading to the highest likelihood of choosing a vegetarian option.

4.2 | Reactance

To test whether a menu that restricts freedom of choice regarding meat consumption would lead to more reactance, a MANOVA with menu (*all vegetarian vs. optional adding meat vs. increased offer with indication vs. increased offer without indication*) as a predictor and threat of freedom and anger as dependent variables was conducted. No significant effect of menu on the combination of dependent variables was found ($F(6,648) = 1.23$, $p = .289$, and $\eta_p^2 = .011$).

4.3 | Willingness to eat at a restaurant

To test whether the menu structure by increasing the offer on vegetarian dishes will lead to more willingness to eat at a restaurant, an ANOVA with menu (*all vegetarian vs. optional adding meat vs. increased offer with indication vs. increased offer without indication*) as a predictor and willingness to eat at a restaurant as a dependent variable was conducted. No significant effect of menu on willingness to eat at a restaurant was found ($F(3,325) = 1.44$, $p = .231$, and $\eta_p^2 = .013$).

4.4 | Food choice

Using a binary logistic regression analysis, we tested whether the three different menus varied in effectiveness to stimulate the choice for a vegetarian dish, including menu (*optional adding meat vs. increased offer with indication vs. increased offer without indication*) and a standardized variable of past behavior regarding meat consumption as predictors and food choice as a dependent variable. As the participants in the all vegetarian menu could not choose a meat option, this condition was not included in the binary logistic regression. The regression showed that menu and past behavior regarding meat consumption affected food choice and that the model fits the data well (see Table 4). With the optional adding meat menu as a reference category, a significant reduction in vegetarian dish choice was found when presenting a menu that included an increased offer with indication. While the increased offer without indication also shows a lower level of vegetarian dish choice, this effect was not significant. The significant effect of past behavior regarding meat consumption shows that people with higher prior meat consumption were more likely to choose a meat dish.

5 | GENERAL DISCUSSION

The aim of this study was to investigate how restaurants can effectively stimulate the choice of vegetarian dishes by changing the menu structure. Therefore, we tested the effectiveness of an all vegetarian menu, a menu where people had the option to add meat to the vegetarian dishes, a menu with an increased offer in vegetarian dishes with indication, and a menu with an increased offer in vegetarian dishes without indication in stimulating the choice for vegetarian dishes. No significant differences between conditions were found

in reactance and willingness to eat at a restaurant. Importantly, results show that the optional adding meat menu was most effective in stimulating people to choose a vegetarian dish. These findings suggest that the choice for vegetarian dishes can positively be altered by changing the menu structure.

In the current study, no link was found between the menu structure and reactance. This is contrary to earlier findings which showed that restrictions led to noncompliance, possibly as a result of reactance (e.g., Lombardini & Lankoski, 2013). As perceived threat of freedom of choice usually leads to reactance (Brehm, 1966), our findings might indicate that people did not feel threatened in their freedom to choose when the all vegetarian menu was presented to them. A possible explanation for these differences might be that previous research (Lombardini & Lankoski, 2013) was conducted in Finland in 2013, while in the Netherlands, there has been an increase in flexitarianism (Keuchenius & van der Lelij, 2015) and a decrease in meat consumption (NOS 2017) in recent years which might influence reactance responses. In addition, in the current study, many participants were flexitarians. Therefore, the question is whether and to what extent these findings are generalizable to more frequent meat eaters. Research showed that reactance responses are stronger when the topic of influence is important for a person (Miron & Brehm, 2006) and therefore it is quite likely that regular meat eaters respond differently than flexitarians. In addition, we only looked at the effect of menus, while there might be other factors that could be important, for example, the price of the dishes or the social environment. Future research might test our findings in real-life situations, while including these factors.

Though willingness to eat at a restaurant was not influenced by the menu structure, the optional adding meat menu was, as expected, the most effective in stimulating the choice for vegetarian dishes. This is in line with earlier research, suggesting that defaults (i.e., options people get when they do not explicitly ask for other options) are very effective in increasing the choice for vegetarian dishes (Campbell-Arvai et al., 2014). In our study, we implemented an easy alternative in which meat could be directly added instead of the necessity to ask for another menu, which made concerns about this strategy as a constraint in choices unlikely. In addition, as can be concluded from the pilot study, the optional adding meat menu also had the highest scores of suggesting a norm, which could be another explanation for its effect. Unfortunately, the results of the pilot study cannot directly be linked to the results of our main study since different samples were used. As also no influence of reactance was found, future studies need to further investigate the underlying mechanisms which make defaults more effective. One possible direction could be to include the psychological construct of speciesism which has been shown to predict meat consumption (Caviola et al., 2019).

In line with earlier research (Bacon & Krpan, 2018), indications of the vegetarian dish seem to be less effective in stimulating the choice for vegetarian dishes: It was shown that indicating certain dishes as vegetarian by placing them into a separate category on the menu was the least effective in stimulating the choice for vegetarian dishes compared to their other menus. However, while indicating the vegetarian dishes with a (V) helped to avoid this unwanted effect in their study, in the current study we found that this indication has similar unwanted effects, possibly because this makes the vegetarian dishes look like they are not meant for people who are not vegetarian. Thus, seemingly, the effects of indication on vegetarian dishes are not as straightforward as suggested and future research is necessary to understand the underlying mechanisms.

An important limitation of the current study is that due to time constraints it was not possible to add a regular menu in which more meat dishes than vegetarian dishes were presented. The missing control condition limits the conclusions that can be made, as it cannot be said for sure whether the optional meat menu increases vegetarian choices or whether the other menus decrease vegetarian choices. Thus, such an additional control condition should be added in future research to see whether the present findings can be replicated, and to be able to compare the here tested menus with a menu that better reflect menus currently often used in restaurants.

The current research provides some suggestions for restaurants on how to design their menus in order to foster vegetarian choices. Responsibility concerning sustainability is often demanded by multiple parties, such as authorities, customers, and employees, and when strategies are used to anticipate to this demand, it can lead to competitive advantages in the long term (Darkow, Foerster, & von der Gracht, 2015). Using default-based nudges might be a promising strategy to stimulate the choice for a vegetarian dish. Especially giving people the option to add meat to the vegetarian dishes on a menu can improve the choices for vegetarian dishes. Furthermore, not indicating vegetarian dishes as a vegetarian can stimulate the choice for these dishes. While using defaults, people's behavior is guided by the reflection of shared expectations about typical or desirable behavior, without using force to make them behave in a certain way. Presenting meat as an alternative or additive option can make the choice for vegetarian dishes the norm and with that, it can change behavior toward a flexitarian lifestyle.

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APPENDIX A: MENUS

Menu 1: Vegetarian

Menu

Pizza

Margherita
Tomato sauce, mozzarella and fresh oregano

Contadina
Tomato sauce, cherry tomatoes, arugula and curls of Parmesan cheese

Norma
Tomato sauce, ricotta cheese, grilled eggplant, mozzarella and basil

Gusto
Tomato sauce, arugula and a mix of grilled pepper, eggplant and zucchini

Delizioza
Tomato sauce, mozzarella, roasted red pepper and fresh oregano

Ai funghi
Tomato sauce, mozzarella, mushrooms and fresh garlic

Pasta

Bianca
Garlic, parsley, chili peppers and olive oil

Pomodori Secchi
Tomato sauce, arugula, sun dried tomatoes, pine nuts, cherry tomatoes and Parmesan cheese

Funghi
Cream sauce, mushrooms and parsley

Siciliana
Tomato sauce, buffalo mozzarella, basil, cherry tomatoes and Parmesan cheese

Ravioli Verdi
Stuffed pasta with ricotta and spinach, cream sauce, goat cheese, arugula, pepper, eggplant and zucchini

Ravioli Caprese
Stuffed pasta with sun dried tomatoes, cream sauce, mozzarella, Parmesan cheese and basil pesto

Others

Homemade Quiche
With various types of vegetables, potato, onion, spinach and different types of cheese

Leek pie
Richly filled with leek and cheese

Vegetarian schnitzel
With a choice of sauce: gypsy / pepper / mushroom/ sate

Stuffed peppers
With various types of vegetables, onion, kidney beans, rice and different types of cheese

Fried goat cheese
With sweet sauce

Falafel burger
Served with mint sauce, marinated cucumber, tomato and lettuce

Menu 2: Optional adding meat

Menu

Pizza

Margherita
Tomato sauce, mozzarella and fresh oregano

Contadina
Tomato sauce, cherry tomatoes, arugula and curls of Parmesan cheese

Norma
Tomato sauce, ricotta cheese, grilled eggplant, mozzarella and basil

Gusto
Tomato sauce, arugula and a mix of grilled pepper, eggplant and zucchini

Delizioza
Tomato sauce, mozzarella, roasted red pepper and fresh oregano

Ai funghi
Tomato sauce, mozzarella, mushrooms and fresh garlic

Pasta

Bianca
Garlic, parsley, chili peppers and olive oil

Pomodori Secchi
Tomato sauce, arugula, sun dried tomatoes, pine nuts, cherry tomatoes and Parmesan cheese

Funghi
Cream sauce, mushrooms and parsley

Siciliana
Tomato sauce, buffalo mozzarella, basil, cherry tomatoes and Parmesan cheese

Ravioli Verdi
Stuffed pasta with ricotta and spinach, cream sauce, goat cheese, arugula, pepper, eggplant and zucchini

Ravioli Caprese
Stuffed pasta with sun dried tomatoes, cream sauce, mozzarella, Parmesan cheese and basil pesto

Overig

Homemade Quiche
With various types of vegetables, potato, onion, spinach and different types of cheese

Leek pie
Richly filled with leek and cheese

Vegetarian schnitzel
With a choice of sauce: gypsy / pepper / mushroom/ sate

Stuffed peppers
With various types of vegetables, onion, kidney beans, rice and different types of cheese

Fried goat cheese
With sweet sauce

Falafel burger
Served with mint sauce, marinated cucumber, tomato and lettuce

Optional:

+ Minced beef
+ Pancetta
+ Ham
Schnitzel with meat I/O vegetarian schnitzel

+ Grilled chicken
+ Fried chicken
+ Salami
Burger with meat I/O falafel burger

Menu 3: Increased offer with indication

Menu

Pizza

Margherita (V)
Tomato sauce, mozzarella and fresh oregano

Contadina (V)
Tomato sauce, cherry tomatoes, arugula and curls of Parmesan cheese

Gusto (V)
Tomato sauce, arugula and a mix of grilled pepper, eggplant and zucchini

Fiamma
Tomato sauce, mozzarella, spicy salami and chili peppers

Ai funghi (V)
Tomato sauce, mozzarella, mushrooms and fresh garlic

Pollo con extra
Tomato sauce, mozzarella, red onions, fried chicken, roasted pepper and fresh spinach

Overig

Leek pie (V)
Richly filled with leek and cheese

Pork tenderloin
With cream mushroom sauce or cream pepper sauce

Vegetarian schnitzel (V)
With a choice of sauce: gypsy / pepper / mushroom / sate

Stuffed peppers (V)
With various types of vegetables, onion, kidney beans, rice and different types of cheese

Round steak
From the grill with herb butter

Falafel burger (V)
Served with mint sauce, marinated cucumber, tomato and lettuce

Pasta

Bianca (V)
Garlic, parsley, chili peppers and olive oil

Pomodori Secchi (V)
Tomato sauce, arugula, sun dried tomatoes, pine nuts, cherry tomatoes and Parmesan cheese

Carbonara
Cream sauce, Pancetta bacon, egg and Parmesan cheese

Bolognese
Bolognese sauce, minced beef, celery, carrot, onion, Parmesan cheese and parsley

Siciliana (V)
Tomato sauce, buffalo mozzarella, basil, cherry tomatoes and Parmesan cheese

Ravioli Caprese (V)
Stuffed pasta with sun dried tomatoes, cream sauce, mozzarella, Parmesan cheese and basil pesto

Menu 4: Increased offer without indication

Menu

Pizza

Margherita
Tomato sauce, mozzarella and fresh oregano

Contadina
Tomato sauce, cherry tomatoes, arugula and curls of Parmesan cheese

Gusto
Tomato sauce, arugula and a mix of grilled pepper, eggplant and zucchini

Fiamma
Tomato sauce, mozzarella, spicy salami and chili peppers

Ai funghi
Tomato sauce, mozzarella, mushrooms and fresh garlic

Pollo con extra
Tomato sauce, mozzarella, red onions, fried chicken, roasted pepper and fresh spinach

Overig

Leek pie
Richly filled with leek and cheese

Pork tenderloin
With cream mushroom sauce or cream pepper sauce

Vegetarian schnitzel
With a choice of sauce: gypsy / pepper / mushroom / sate

Stuffed peppers
With various types of vegetables, onion, kidney beans, rice and different types of cheese

Round steak
From the grill with herb butter

Falafel burger
Served with mint sauce, marinated cucumber, tomato and lettuce

Pasta

Bianca
Garlic, parsley, chili peppers and olive oil

Pomodori Secchi
Tomato sauce, arugula, sun dried tomatoes, pine nuts, cherry tomatoes and Parmesan cheese

Carbonara
Cream sauce, Pancetta bacon, egg and Parmesan cheese

Bolognese
Bolognese sauce, minced beef, celery, carrot, onion, Parmesan cheese and parsley

Siciliana
Tomato sauce, buffalo mozzarella, basil, cherry tomatoes and Parmesan cheese

Ravioli Caprese
Stuffed pasta with sun dried tomatoes, cream sauce, mozzarella, Parmesan cheese and basil pesto

APPENDIX B: INSTRUMENT

Thank you for participating in this study. This helps me to obtain my master's degree in (pro) social communication at [Name of University].

This research concerns food choices. It's about your opinion and therefore there are no wrong answers. Completing the questionnaire will take about 5 minutes.

Your data will be treated confidentially and you will remain anonymous.

For questions or comments, you can send an e-mail to: [Email address]

By taking part in this study you have a chance of winning one of three bol.com gift cards. By sharing this questionnaire with others, you increase your chances of winning. You can read exactly how this works after completing the questionnaire.

By clicking on the arrow at the bottom right you agree to participate in this research and you can start. You remain free at all times to stop participation without any consequences.

Imagine that you want to go out for dinner tonight with some good friends or family, but you still don't know where. That is why you are looking for a restaurant in the neighborhood and you find one. To determine whether this restaurant is suitable, you view the menu in advance.

Next, you will see this menu. Based on this menu you can indicate how much you would like to eat at this restaurant. You will also be asked to choose the dish that you would order. After that, a number of supplementary and concluding questions will be asked.

* The menu is showed *

Indicate on a scale from 0 to 10 how much you would like to eat at this restaurant. 0 means not at all, 10 means very much.

(To fill in 0 you first have to move back and forth the slider)

Click on what you would like to order.

* Menu with possibility to click on dish(es) *

Indicate to what extent you agree with the following statements:

The menu threatened my freedom of choice.

The menu tried to make a choice for me.

The menu tried to manipulate me.

The menu tried to exert pressure on me.

Totally disagree - disagree - neutral/do not know - agree - totally agree.

Indicate to what extent you agree with the following statements:

Did you feel angry when you saw the menu?

Did you get annoyed when you saw the menu?

Did you find the menu annoying?

Did the menu irritate you?

Totally disagree - disagree - neutral/do not know - agree - totally agree.

What did you think while seeing the menu?

Do not think about this question too long, write down what first comes to mind.

Do you have certain dietary requirements, allergies or do you not eat certain food for other reasons?

Indicate for each of the following food categories how often you have used it at dinner last week. If you do not know exactly, make an estimated guess based on your eating habits. (To fill in 0 you first have to move back and forth the slider).

Vegetables

Potatoes

Rice

Pasta

Meat

Fish

Eggs

Dairy

What is your gender?

Man

Woman

Other

What is your age?

What is your current or last completed level of education?

None

Primary education

Mavo/vbo/vmbo

Mbo/havo/vwo

Hbo

Wo

Other

Thank you for participating in this study. By sharing this questionnaire with others, you increase your chances of winning a bol.com gift card!

The one that attracts the most participants wins a gift card of € 15. The second prize is a gift card of € 5. Furthermore, a gift card of € 5 will be raffled among all participants. All participants are asked to fill in who asked them to participate in this study below. The more often your name is mentioned, the greater your chances of winning a prize.

Do you want to win one of these gift cards? Then enter your name and e-mail address below.

Ask your network to complete the questionnaire as well to increase your chances!

Please note: this question and the question below are not linked to your previous answers in order to guarantee anonymity. Your e-mail address will only be used to contact you regarding the gift voucher and will not be linked to data or used for any other purpose.

Name

E-mail address

Who asked you to participate in this study?

Note: you fill in this question to increase the chance that the person who asked you to fill in this questionnaire will win a prize.

The researcher

Otherwise, namely: